

### Claims

What is claimed is:

1. An antistatic polymer composition characterized in that it comprises:
    - (A) one or more polymers selected from the group consisting of polyester, polycarbonate, polyamide, polyoxymethylene, polyphenylene sulfide, and compounds of polyphenylene oxide and polystyrene;
    - (B) a polyether-system ion-conducting polymer;
    - (C) an ion source comprising: (i) a source of at least one carboxyl group or sulfo group being selected from the group consisting of hydrocarbon acids containing 6-54 carbon atoms, sulfonic acids and organic polymers with at least one bonded carboxyl group or sulfo group; and (ii) a source of at least one metal ion that is selected from the group consisting of sodium ion, potassium ion, lithium ion, magnesium ion, and zinc ion and that can react with the carboxyl groups or sulfo group of (i), solid electrolytes or polymer electrolytes; and
    - (D) a plasticizer of the aforementioned polyether-system ion-conducting polymer (B).
  2. The antistatic polymer composition of Claim 1 characterized in that the polyether-system ion-conducting polymer (B) is a polyetherester amide.
  3. The antistatic polymer composition of Claim 1 characterized in that plasticizer (D) of the polyester-system ion-conducting polymer (B) is a plasticizer represented by formula (1)
 
$$A-O-\underset{\underset{X}{|}}{\text{CH}}-(\text{CH}_2)_m-\text{O}]_n-B \quad (1)$$
- wherein m is an integer of 1-3, n is an integer of 4-25, A is a C<sub>1</sub>-C<sub>10</sub> alkyl, acyl, or aroyl, B is a C<sub>1</sub>-C<sub>10</sub> alkyl, acyl, or aroyl, and X is H, CH<sub>3</sub>, or C<sub>2</sub>H<sub>5</sub>.
4. The antistatic polymer composition of Claim 1 characterized in that it contains 40.0-98.4 wt% of polymer (A), 1.0-35.0 wt% of polyether-system ion-conducting polymer (B), 0.1-15.0 wt% of ion source (C), and 0.5-10.0 wt% of

plasticizer (D) with respect to the weight of the composition as a whole.

5. Moldings characterized in that they are molded from the antistatic polymer composition of Claim 1.

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6. Transfer medium-separating guide parts for electrophotographic devices characterized in that they are molded from the antistatic polymer composition of Claim 1.

10 7. A molded article made from the composition of claim 4 having surface resistivity in the range of  $10^7$  to  $10^{13}$  ohms, as measured under ASTM D 257 and being applied an electrostatic painting directly on surface thereof.

8. An antistatic polymer composition characterized in that it comprises

15 (A) one or more polymers selected from the group consisting of ABS (acrylonitrile butadiene styrene), polyethylene, polypropylene, polypropylene copolymer and EPDM(ethylene/propylene/diene) elastomer;

(B) a polyether-system ion-conducting polymer;

20 (C) an ion source comprising: (i) a source of at least one carboxyl group or sulfo group being selected from the group consisting of hydrocarbon acids containing 6-54 carbon atoms, sulfonic acids and organic polymers with at least one bonded carboxyl group or sulfo group, and (ii) a source of at least one metal ion that is selected from the group consisting of sodium ion, potassium ion, lithium ion, magnesium ion, and zinc ion and that can react with the carboxyl groups or sulfo group of (i), solid electrolytes or polymer electrolytes; and

25 (D) a plasticizer of the aforementioned polyether-system ion-conducting polymer (B).

9. The composition of Claim 1 further comprising water-repellent comprising fluorinated compounds, silicone compound or a mixture thereof.

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10. A molded article made from the composition of Claim 8.

**AMENDED CLAIMS**

[received by the International Bureau on 15 June 1999 (15.06.99);  
original claims 1, 2, 3, 4 and 8 amended;  
remaining claims unchanged (3 pages)]

1. An antistatic polymer composition characterized in that it comprises:
  - (A) one or more polymers selected from the group consisting of polyester, polycarbonate, polyamide, polyoxymethylene, polyphenylene sulfide, and compounds of polyphenylene oxide and polystyrene;
  - (B) a ion-conductive polyether-based polymer;
  - (C) an ion source comprising: (i) a source of at least one carboxyl group or sulfo group being selected from the group consisting of hydrocarbon acids containing 6-54 carbon atoms, sulfonic acids and organic polymers with at least one carboxyl group or sulfo group; and (ii) a source of at least one metal ion that is selected from the group consisting of sodium ion, potassium ion, ammonium ion, lithium ion, magnesium ion, calcium ion, copper ion, and zinc ion and that can react with the carboxyl groups or sulfo group of (i), solid electrolytes or polymer electrolytes; and
  - (D) a plasticizer of the aforementioned ion-conductive polyether-based polymer (B).
2. The antistatic polymer composition of Claim 1 characterized in that the ion-conductive polyether-based polymer (B) is a polyetherester amide.
3. The antistatic polymer composition of Claim 1 characterized in that plasticizer (D) of the polyester-system ion-conducting polymer (B) is a plasticizer represented by formula (1)
 
$$A-O-\underset{\underset{X}{|}}{CH}-(CH_2)_m-O]_n-B \quad (1)$$

wherein m is an integer of 1-3, n is an integer of 4-25, A is a C<sub>1</sub>-C<sub>10</sub> alkyl, acyl, or aroyl, B is a C<sub>1</sub>-C<sub>10</sub> alkyl, acyl, or aroyl, and X is H, CH<sub>3</sub>, or C<sub>2</sub>H<sub>5</sub>.
4. The antistatic polymer composition of Claim 1 characterized in that it

contains 40.0-98.4 wt% of polymer (A), 1.0-35.0 wt% of ion-conductive polyether-based polymer (B), 0.1-15.0 wt% of ion source (C), and 0.5-10.0 wt% of plasticizer (D) with respect to the weight of the composition as a whole.

5. Moldings characterized in that they are molded from the antistatic polymer composition of Claim 1.

6. Transfer medium-separating guide parts for electrophotographic devices characterized in that they are molded from the antistatic polymer composition of Claim 1.

7. A molded article made from the composition of claim 4 having surface resistivity in the range of  $10^7$  to  $10^{13}$  ohms, as measured under ASTM D 257 and being applied an electrostatic painting directly on surface thereof.

8. An antistatic polymer composition characterized in that it comprises

- (A) one or more polymers selected from the group consisting of ABS (acrylonitrile butadiene styrene), polyethylene, polypropylene, polypropylene copolymer and EPDM(ethylene/propylene/diene) elastomer;
- (B) a polyether-system ion-conducting polymer;
- (C) an ion source comprising: (i) a source of at least one carboxyl group or sulfo group being selected from the group consisting of hydrocarbon acids containing 6-54 carbon atoms, sulfonic acids and organic polymers with at least one carboxyl group or sulfo group and (ii) a source of at least one metal ion that is selected from the group consisting of sodium ion, potassium ion, ammonium ion, lithium ion, magnesium ion, calcium ion, copper ion, and zinc ion and that can react with the carboxyl groups or sulfo group of (i), solid electrolytes or polymer electrolytes ; and
- (D) a plasticizer of the aforementioned ion-conductive polyether-based polymer (B).

9. The composition of Claim 1 further comprising water-repellent

comprising fluorinated compounds, silicon compound or a mixture thereof .

10. A molded article made from the composition of Claim 8.